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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:	Stein et al.
Serial No.	:	10/605,546
Filed	:	October 7, 2003
For	:	METHOD AND APPARATUS TO ADAPTIVELY COOL A WELDING-TYPE SYSTEM
Group Art No.	:	1725
Examiner	:	Dr. Kevin P. Kerns

CERTIFICATION UNDER 37 CFR 1.8(a) and 1.10

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<u>APPEAL BRIEF PURSUANT TO 37 C.F.R. §§1.191 AND 1.192</u>

Dear Sir:

This Appeal Brief is being filed in furtherance of the Notice of Appeal filed on February 9, 2007.

1. **REAL PARTY IN INTEREST:**

The real party in interest is Illinois Tool Works Inc., the Assignee of the above-referenced application by virtue of the Assignment to Illinois Tool Works Inc., recorded on October 7, 2003, recorded at reel 014029, frame 0446.

2. **RELATED APPEALS AND INTERFERENCES:**

Appellant is unaware of any other appeals or interferences related to this Appeal; however, Appellant has previously argued a prior final rejection on the current application and such final rejection was removed as the result of a pre-appeal review requested by Appellant in the response filed January 19, 2006. The undersigned is Appellant's legal representative in this Appeal. Illinois Tool Works Inc., the Assignee of the above-referenced Application, as evidenced by the documents mentioned above, will be directly affected by the Board's decision in the pending appeal.

3. **STATUS OF THE CLAIMS:**

Claims 1-24 are currently pending, and claims 1-24 are currently under final rejection and, thus, are the subject of this appeal.

4. **STATUS OF AMENDMENTS:**

All previous amendments have been entered. Appellant has submitted no additional amendments subsequent to the Final Office Action of November 9, 2006.

5. **SUMMARY OF THE CLAIMED SUBJECT MATTER:**

Claim 1 calls for a welding-type system (10) having a welding-type component (32) configured to present an electrode to a weld. Application, ¶38. The welding-type system (10) also includes a cooling system (44) configured to automatically circulate coolant through at least the welding-type component (32) upon activation of the welding-type component (32). Id. The cooling system (44) also maintains coolant circulation upon deactivation of the welding-type component (32) if a measured coolant temperature exceeds a threshold. Id.

Claim 12 calls for a welding apparatus (10) including a power source (12). Application, ¶39. Also included in the welding apparatus (10) is a cooling system (44) designed to circulate coolant. Id. Connected to both the power source (12) and the cooling system (44) is a welding torch (32). Id. The welding apparatus (10) further includes a controller (50) configured to regulate the cooling system (44), such that upon activation of the welding torch (32), coolant is

automatically caused to at least flow through the welding torch (32). Id. The controller (50) is also configured to monitor a temperature of the coolant after deactivation of the welding torch (32). The controller (50) is further configured to continue to circulate coolant until a temperature of the coolant falls below a predetermined value. Id.

Claim 18 calls for a method for cooling a welding-type component (32) and includes the step of detecting activation of a welding-type component (32). Application, ¶40. Upon activation, the method further includes the step of automatically circulating coolant through the welding-type component (32). Id. Upon deactivation, the method includes the step of monitoring coolant temperature. Id. The method also calls for maintaining coolant circulation through the welding-type component (32) if the coolant temperature exceeds a threshold. Id.

A welding-type apparatus (10) is called for in claim 23. Application, ¶41. The welding-type apparatus (10) includes means for providing welding-type power in the form of a power source (12). Application, ¶¶21, 41. A means for outputting welding-type power to an output area is also included and is in the form of a torch (32). Id. A means for detecting activation of the means for the outputting welding-type power is included in the form of a controller (50) as well as a means for automatically circulating coolant, i.e., cooling system (44), through at least the means for providing welding-type power, power source (12), upon activation of the means for outputting welding-type power, i.e., torch (32). Application, ¶¶23-24, 41. A means for detecting deactivation of the means for outputting welding-type power is also included in the welding-type apparatus in the form of controller (50), as well as a means for determining coolant temperature, i.e., temperature sensor (54), and a means for maintaining coolant circulation until coolant temperature falls below a certain set point in the form of cooling system (44). Id.

6. **GROUNDS OF REJECTION:**

In the Office Action of November 9, 2006, the Examiner provisionally rejected claims 1-24 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 22-25, 27-35, 37-40, 44, 45, 48-50, and 54 of copending Application No. 10/708,657 (US 2005/0205542). The Examiner also rejected claims 1-24 under 35 U.S.C. §103(a) as being unpatentable over either Prunier (FR 2 536 320) or Behnke et al. (USP 2,510,207) in view of Bailey (USP 5,266,778).

7. **ARGUMENT:**

Provisional Double Patenting Rejection

With respect to the provisional rejection of claims 1-24 under the doctrine of obviousness-type double patenting as being unpatentable over claims 22-25, 27-35, 37-40, 44, 45, 48-50, and 54 of copending Application No. 10/708,657, Applicant notes that the provisional obviousness-type double patenting rejection is not the only remaining rejection in either the present application or Application No. 10/708,657. The Examiner has applied rejections under §103(a) for the present application in the Final Office Action mailed on November 9, 2006, and for Application No. 10/708,657 in the Office Action of December 1, 2006. Pursuant to MPEP §§ 1490(V)(D) and 804(I)(B)(1), Applicant therefore takes no present action with respect to this provisional rejection.

Rejection under 35 U.S.C. §103(a) as being unpatentable over either Prunier or Behnke et al. in view of Bailey

Claims 1-24

The Examiner rejected claims 1-24 under a blanket 35 U.S.C. §103(a) rejection wherein the Examiner alleged that each and every one of these claims are unpatentable over *either* Prunier or Behnke et al., *and* in view of Bailey, stating that:

> It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify either of the arc welding machines disclosed individually by Prunier and Behnke et al., by using a temperature sensor in cooperation with a control means to maintain coolant circulation while establishing a desired temperature set point, as taught by Bailey, in order to provide accurate, dynamic control of fluid temperature until expiration of a specific time period and/or until a temperature falls below a predetermined certain value or set point….

Office Action, November 9, 2006, p. 6. The Examiner conceded that Prunier and Behnke et al. do not disclose "a means to maintain coolant circulation until expiration of a specific time period and/or until a temperature falls below a certain value," but asserted that Bailey teaches a dynamic temperature control achieving such subject matter. Id. at 5.

Initially, Applicant notes the impropriety of applying references in the alternative. MPEP § 706.02 (stating that cumulative rejections should be strictly avoided). The Examiner must apply the best reference, and avoid duplicative rejections wherever possible. Id. Otherwise, such creates an unnecessary burden on Applicants and the Board alike, and further makes it appear that the Examiner is guessing at the rejection, which ultimately leads to uncertainty.

In substance, Appellant believes that a *prima facie* case of obviousness has not been established and one cannot be made based on the art of record. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. MPEP §2143. Second, there must be a reasonable expectation of success and both the reasonable expectation of success and the teaching or suggestion to make the claimed combination must be found in the prior art, not in applicant's disclosure. Id., citing In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP §2143.

Appellant believes that a *prima facie* case of obviousness cannot be made based on the art of record because, as will be shown below, (1) the references are directed to very different purposes and there is no motivation to combine these references in a way done so by the Examiner, other than Applicant's own teaching; (2) the combination lacks a reasonable expectation of success; and (3) all the elements of the present claims are not present in the references. The Examiner has not established the three basic criteria required under MPEP §2143. Appellant will now address each of these three criteria required by MPEP §2143.

1. Lack of Motivation to Combine the References

Appellant respectfully disagrees with the Examiner's conclusion that it would have been obvious to one skilled in the art to combine the teachings of Bailey with the teachings of either Prunier or Behnke et al. to achieve the current invention. MPEP §2143.01 states that "[o]bviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so." Contrary to the Examiner's assertion, it would not have been obvious to modify Prunier or Behnke et al. by including the temperature control and temperature sensor of Bailey because there is no motivation to do so. Prunier and Behnke et al. are directed to a coolant system for use in a welding torch/machine. The temperature control and temperature sensor disclosed in Bailey is directed to a thermal blanket or heating pad. There is no evidence to support that one skilled in the art of welding would look to the field of heating pads to make modifications to a welding machine design. The Examiner is using improper hindsight reasoning to combine the invention of Bailey with Prunier and Behnke et al. using the current invention as a roadmap. The unrelated subject matter of the references is evidence that there is no reasonable motivation to combine the references in the manner done so by the Examiner.

Additionally, the Examiner has not established any line of reasoning to show why one of ordinary skill in the art would believe it obvious to equip a welding torch with such a precise and complex temperature control system as that of Bailey. Bailey teaches a system designed to maintain and achieve a desired set point temperature. The system automatically heats and cools a coolant liquid to maintain temperature at the set point, plus or minus a temperature differential (dT) of 3 degrees. See Bailey, Fig. 5, Col. 6, ll. 29-39. Accordingly, Bailey regulates temperature in a thermal load (such as a thermal blanket) not merely by circulating a fluid, but by utilizing thermoelectric heat exchangers or thermal modules 26 which are controlled by discrete voltage levels to actively heat or cool the fluid. Bailey, Col. 4, l. 67 to col. 5, l. 2. The Examiner has not explained why one might or might not utilize such a system in a welder, other than to assert broad obviousness allegations. Without such specifics, one cannot come to such an unsupported conclusion.

Conversely, the system of the present invention operates with only a temperature ceiling, generally circulating fluid to cool the torch while the temperature thereof is higher than the ceiling. It is of no affect to the system of the present invention how low the temperature of the fluid goes below the ceiling. One of ordinary skill in the art would not find it necessary or appropriate to necessarily maintain the temperature of fluid through a welding torch at one precise temperature, let alone to do so by heating the fluid, as Bailey teaches.

Furthermore, the systems of Behnke et al. and Bailey actually teach away from one another. That is, Behnke et al. teaches the use of relays 10, 12, 17, a timer 14, and switches 18, 20 to control the flow of coolant to a welding torch (i.e., stop coolant flow). See Behnke et al., Col. 1, ll. 52-55 and Col. 2, ll. 1-17. The system of Bailey, on the other hand, is not configured to interrupt coolant flow, but rather, relies on continuous coolant flow, along with thermoelectric heat exchangers/thermal modules 26 and a temperature sensor 30, 32 to control temperature in the system and in the coolant. Bailey, Col. 4, ll. 30-39. Shutting off coolant circulation in Bailey would inevitably cause the undesired result of having non-uniformities in the temperature of the coolant. Thus, the systems of Bailey and Behnke teach away from one another in that the system of Bailey relies upon continuous coolant flow and the system of Behnke et al. teaches coolant flow that is cut off using relays and a timer.

For all these reasons, Appellant believes that there is no motivation to combine Bailey with either Prunier or Behnke et al.

2. No Reasonable Expectation of Success

Even assuming *arguendo* that there is some motivation to combine the teachings of either Prunier or Behnke et al. with Bailey, Appellant believes that a prima facie case of obviousness has not been established and one cannot be made based on the art of record. The combination of the temperature control and temperature sensor of Bailey with the welding torch coolant system of Prunier or Behnke et al. would not result in a coolant system as called for in the current invention, and there would not be any reasonable expectation of success for achieving such an invention. That is, were Bailey combined with either Prunier or Behnke, the resulting system would be a welding torch coolant system that includes a temperature control and temperature sensor that controls the temperature of the coolant in the system by utilizing thermoelectric heat exchangers or thermal modules which are controlled by discrete voltage levels to actively heat or cool fluid. See Bailey, Col. 4, l. 67 to Col. 5, l. 2. This is not what is what is called for in the current invention. As will be discussed in greater detail below, the current invention controls circulation of the coolant, it does not control temperature of the coolant by way of thermoelectric heat exchangers or thermal modules. As such, Appellant believes that there is not any reasonable expectation of success for achieving the current invention based on the combination of Bailey with either Prunier or Behnke et al.

3. Failure to Set Forth All the Elements of the Claims

In addition to there being a lack of motivation to combine the cited references that is necessary for a *prima facie* case of obviousness, the cited references also fail to teach, disclose, or suggest all of the elements of the claims. That is, the teachings of Bailey combined with the teachings of either Prunier or Behnke et al., do not set forth each and every element called for in the current claims. The failure of the cited references to teach, disclose, or suggest all the elements of each of the independent claims (claims 1, 12, 18, and 23) is discussed in detail below.

Claim 1

Claim 1 calls for, in part, a welding-type system having a cooling system which maintains coolant circulation upon deactivation of a welding-type component if a measured coolant temperature exceeds a threshold. As detailed in the current application, the cooling system 44 in welding-type system 10 is configured to adaptively control circulation of coolant to and from torch 32. Application, ¶23. The cooling system 44 is configured to maintain coolant circulation upon deactivation of the torch 32 if a measured coolant temperature exceeds a threshold. Application, ¶24. The cooling system 44 includes a coolant tank 46 and pump

assembly 48 designed to pump fluid from the tank to the torch 32 in response to control signals from a controller 50. Application, ¶23. The controller 50 includes a temperature sensor 54 that provides feedback as to the temperature of the torch and/or the coolant within the torch. In this regard, controller 50 can turn on or off pump 48 to control the flow of coolant to and from the torch based on feedback from temperature sensor 54 such that circulation is maintained after a welding process is complete if the temperature exceeds a specified set point. Application, ¶24. Thus, the cooling system called for in claim 1 is configured to maintain coolant circulation upon deactivation of a welding-type component if a measured coolant temperature exceeds a threshold.

Both Prunier and Behnke et al. fail to teach or disclose such a cooling system. Prunier fails to teach or disclose any mechanism or control for controlling coolant flow in the system. Behnke et al. discloses a system in which a control box B contains a series of relays 10, 12, 17, a timer 14, and switches 18, 20 that control the flow of argon gas and coolant in the welding torch. See Behnke et al., Col. 1, ll. 52-55 and Col. 2, ll. 1-17. The relays respond to increases/decreases in arc voltage to determine when the timer and switches should be activated in order to control flow of the gas and coolant. Id. Behnke et al., however, does not disclose a cooling system adapted to maintain coolant circulation based on whether a temperature of the coolant exceeds a set point temperature. In fact, the Examiner conceded that Prunier and Behnke et al. do not disclose "a means to maintain coolant circulation until expiration of a specific time period and/or until a temperature falls below a certain value," but asserted that Bailey teaches a dynamic temperature control achieving such subject matter. Office Action, supra at 5. Appellant respectfully disagrees and asserts that such generalizations are simply insufficient as a basis for rejecting any patent application thereupon, let alone where the Examiner sets forth a blanket rejection of all pending claims. Specifically, Appellant believes that Bailey does not teach or suggest the subject matter lacking in both Prunier and Behnke et al.

The Examiner has previously dismissed Appellant's arguments concerning the shortcomings of Bailey in teaching or suggesting that which is called for in claim 1, stating that "one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references." Office Action, supra at 8. Regarding the Examiner's extension of this rationale to Appellant's arguments regarding Bailey, Appellant would point out that, as set forth above, the Examiner specifically relies on Bailey for disclosing a dynamic temperature control that controls coolant circulation and admits that Prunier and Behnke et al. do not teach, disclose, or suggest a cooling system as called for in claim 1. As Prunier and Behnke et al. admittedly do not teach or disclose such a controller, it is only logical that Appellant would

focus arguments in this respect on the failure of Bailey to teach, disclose, or suggest a cooling system as called for in claim 1, as that is the assertion the Examiner has made.

As set forth above, claim 1 calls for a welding-type system having a cooling system which maintains coolant circulation upon deactivation of a welding-type component if a measured coolant temperature exceeds a threshold. This is not what is taught or disclosed in Bailey. Rather, Bailey teaches a system similar to a thermostat in which a particular set point temperature is chosen. The system automatically heats and cools a coolant liquid to maintain temperature at the set point, plus or minus a temperature differential (dT) of 3 degrees. See Bailey, Fig. 5 and Col. 6, ll. 29-39. Accordingly, Bailey regulates temperature in a thermal load (such as a thermal blanket) not merely by circulating a fluid, but by utilizing thermoelectric heat exchangers or thermal modules 26 which are controlled by discrete voltage levels to actively heat or cool the fluid. Bailey, Col. 4, l. 67 to col. 5, l. 2.

Bailey does not indicate that an automatic cessation of fluid circulation occurs when a desired temperature has been reached. Rather, Bailey teaches that thermal modules 26 are no longer powered for heating or cooling when the set point temperature is reached, but that fluid circulation is constantly maintained. Bailey, Col. 5, ll. 3-16. The mention in Bailey of "selective" circulation refers to a user's ability to turn the system and its pump on and off via power switch 16, independent and irrespective of temperature control. Compare Bailey, Col. 2, ll. 56-60; col. 4 ll. 9-15 with col. 5, ll. 15-16 (when set point temperature is reached, a zero voltage input to thermal modules 26 results in no heating or cooling). Thus, Bailey contemplates only a heating mode and a cooling mode, but not an operational non-circulation mode. See Bailey, Fig. 3; Col. 4, ll. 50-52 (HEAT and COOL states are switched by a double throw relay).

Furthermore, Bailey actually teaches away from a functionality similar to that of the present invention. The system of Bailey relies on either a remote temperature sensor in a thermal blanket or a liquid temperature sensor in the reservoir. Bailey, Col. 4, ll. 30-39. To shut off circulation would inevitably cause non-uniformities in the temperature of the liquid. For example, if the set point temperature for the thermal blanket was 90 degrees and the system ceased circulating fluid once the fluid sensor 30 indicated 90 degrees was reached, the fluid temperature in the reservoir would likely remain within an acceptable range dT of 90 degrees much longer than the fluid temperature of the thermal blanket. Thus, the fluid in the thermal blanket's manifold might lower well beyond the dT of 90 degrees before the reservoir sensor 30 indicated that the system should restart circulation to heat the fluid. Such a result would be contrary to the teachings of Bailey, the purpose therein being to maintain a relatively constant

temperature in the thermal blanket. See Bailey, Col. 3, ll. 10-14. Therefore, continued circulation is necessary.

In contrast, claim 1 calls for the circulation of a coolant through a welding torch to be maintained after deactivation of the welding-type component "if a measured coolant temperature exceeds a threshold." (Emphasis added). As discussed above, the system of Bailey has no mechanism or mode by which a temperature controller determines whether to maintain coolant circulation or to cease coolant circulation. Coolant circulation is continuous in the system of Bailey. Therefore, since the art of record does not teach or suggest all the elements of claim 1, Appellant respectfully requests that the rejection of claim 1 and all claims depending therefrom be withdrawn.

Claim 2

Claim 2 calls for, in part, the welding-type system of claim 1 to further include a control circuit adapted to electronically communicate with a power source and the welding-type component to affect circulation of coolant through at least the welding-type component and automatically activate the cooling system when the welding-type component is activated and maintain coolant circulation if a temperature of the coolant exceeds a first set point temperature. As set forth above, this is not what is taught or disclosed in Bailey. That is, the system of Bailey has no mechanism or mode by which a temperature controller/control circuit determines whether to maintain coolant circulation or to cease coolant circulation. Coolant circulation is continuous in the system of Bailey and there is no teaching or suggestion that an automatic cessation of fluid circulation occurs when a desired temperature has been reached. Rather, Bailey only teaches that thermal modules 26 are no longer powered for heating or cooling when the set point temperature is reached while fluid circulation is constantly maintained. Bailey, Col. 5, ll. 3-16. Thus, the system of Bailey does not control coolant circulation, it only controls the amount of voltage used to heat the circulating fluid. Claim 2 is therefore patentably distinct over the cited references.

Claim 12

Claim 12 calls for, in part, a welding apparatus having a controller that is configured to (A) regulate the coolant system such that when the torch is activated coolant is automatically caused to flow to the welding torch, (B) monitor a temperature of the coolant after deactivation of the torch, and (C) continue to circulate coolant until a temperature of the coolant falls below a predetermined value. Thus, similar to claim 1, claim 12 calls for coolant circulation to continue after deactivation of a torch, and additionally, claim 12 calls for the coolant circulation to

continue "until a temperature of the coolant falls below a predetermined value." (Emphasis added). That is, a controller actively turns on and off circulation to perform temperature regulation.

Again, this is not what is called for in the system of Bailey. Contrastingly, Bailey uses thermal modules to actively maintain the temperature of a fluid within a range (i.e. heating the fluid), and so must continually circulate the fluid. Bailey discloses a dynamic temperature control 10, which includes a fluid temperature sensor 30 and/or remote temperature sensor 32. The dynamic temperature control 10 is a means of using a multiple discrete level power supply (i.e., thermal modules 26) to optimally control the thermal load with a thermoelectric heat exchanger. Bailey, Col. 4, ll. 67-68 and col. 5, ll. 1-4. The dynamic temperature control 10 is capable of delivering various discrete voltages. Thus, the system of Bailey does not control coolant circulation, it only controls the amount of voltage used to heat the circulating fluid. The Examiner states as much when he recognized Bailey as disclosing a "dynamic temperature control… to control the operating temperature of the fluid…." Office Action, supra at 5-6. (emphasis added)

The dynamic temperature control 10 disclosed in Bailey clearly does not teach or suggest a controller as called for in claim 12 that is configured to monitor a temperature of the coolant after deactivation of the torch and continue to circulate coolant until a temperature of the coolant falls below a predetermined value. As such, the combination of the cited references fails to teach or suggest that which is called for in claim 12. Thus claim 12, and the claims dependent therefrom, are patentably distinct over Bailey and either of Prunier or Behnke et al.

Claim 15

Claim 15 calls for, in part, the controller of claim 12 to further be configured to repeatedly detect a coolant temperature signal and if coolant temperature exceeds a threshold, transmit a circulation maintenance signal to the cooling system independent of welding torch activation status. As previously set forth above, the system of Bailey has no mechanism or mode by which a temperature controller/control circuit determines whether to maintain coolant circulation or to cease coolant circulation. Coolant circulation is continuous in the system of Bailey and there is no teaching or suggestion that an automatic cessation of fluid circulation occurs when a desired temperature has been reached. Simply put, the system of Bailey does not control coolant circulation. As such, claim 15 is therefore patentably distinct over the cited references.

Claim 18

Claim 18 calls for, in part, a method for cooling a welding-type component, including the steps of automatically circulating coolant through a welding-type component upon a detected actuation of a welding-type component, monitoring coolant temperature upon deactivation, and maintaining coolant circulation if the coolant temperature exceeds a threshold. As set forth above with respect to claim 1, Bailey does not teach or suggest such a limitation.

Bailey teaches a system that automatically heats and cools a coolant liquid to maintain temperature at the set point, plus or minus a temperature differential (dT) of 3 degrees. See Bailey, Fig. 5 and Col. 6, ll. 29-39. Accordingly, Bailey regulates temperature in a thermal load (such as a thermal blanket) not merely by circulating a fluid, but by utilizing thermoelectric heat exchangers or thermal modules 26 which are controlled by discrete voltage levels to actively heat or cool the fluid. Bailey, Col. 4, l. 67 to col. 5, l. 2. Bailey does not indicate that an automatic cessation of fluid circulation occurs when a desired temperature has been reached, and in fact, provides no mechanism by which a temperature controller determines whether to maintain coolant circulation or to cease coolant circulation, as coolant circulation is continuous in the system of Bailey. Bailey only teaches that thermal modules 26 are no longer powered for heating or cooling when the set point temperature is reached, but that fluid circulation is constantly maintained. Bailey, Col. 5, ll. 3-16.

Thus, claim 18 is patentably distinct over the art of record. Applicant accordingly requests withdrawal of the rejection of claim 18 and all claims depending therefrom.

Claim 23

Claim 23 calls for, in part, a welding-type apparatus having a means for automatically circulating coolant through at least means for providing welding-type power upon activation of means for outputting welding-type power, means for detecting deactivation of the means for outputting welding-type power, means for determining coolant temperature, and means for maintaining coolant circulation until coolant temperature falls below a certain set point.

As Applicant has shown above, maintaining circulation "until" coolant temperature falls below a value is not taught or suggested by any of Prunier, Behnke et al. or Bailey. Prunier fails to teach or disclose any mechanism or control for controlling coolant flow in the system and Behnke et al. only discloses a system in which coolant flow in the welding torch is controlled by relays, a timer, and switches responding to increases/decreases in arc voltage. Bailey discloses a dynamic temperature control 10 that uses a multiple discrete level power supply (i.e., thermal modules 26) to optimally control a thermal load. Bailey, Col. 4, ll. 67-68 and col. 5, ll. 1-4. The

system of Bailey does not control coolant circulation, it only controls the amount of voltage used to heat the circulating fluid.

As Prunier, Behnke et al. and Bailey fail to disclose means for maintaining coolant circulation until coolant temperature falls below a certain set point, claim 23 is patentably distinct over the art of record, and Applicant requests withdrawal of the rejection thereof.

8. **CONCLUSION:**

In view of the above remarks, Appellant respectfully submits that the Examiner has provided no supportable position or evidence that claims 1-24 are not patentable. As argued above, the combination of either Prunier or Behnke et al. with Bailey (1) does not provide the requisite motivation or suggestion to combine the references in the manner done by the Examiner, (2) lacks a reasonable likelihood of success for any resultant combination thereof, and (3) fails to teach or suggest each and every element as called for in the present claims. Accordingly, Appellant believes claims 1-24 are patentably distinct thereover and respectfully requests that the Board find claims 1-24 patentable over the prior art of record, direct withdrawal of all outstanding rejections, and direct the present application be passed to issuance.

Respectfully submitted,

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[1]The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-2623. Should no proper payment be enclosed herewith, as by credit card authorization being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-2623. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extensions under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 50-2623. Please consider this a general authorization to charge any fee that is due in this case, if not otherwise timely paid, to Deposit Account No. 50-2623.

CLAIMS APPENDIX

In the Claims

1. (Previously Presented) A welding-type system comprising:

a welding-type component configured to present an electrode to a weld; and

a cooling system configured to automatically circulate coolant through at least the welding-type component upon activation of the welding-type component and maintain coolant circulation upon deactivation of the welding-type component if a measured coolant temperature exceeds a threshold.

2. (Original) The welding-type system of claim 1 further comprising a control circuit adapted to electronically communicate with a power source and the welding-type component to affect circulation of coolant through at least the welding-type component and automatically activate the cooling system when the welding-type component is activated and maintain coolant circulation if a temperature of the coolant exceeds a first set point temperature.

3. (Original) The welding-type system of claim 1 wherein the cooling system is further configured to circulate coolant through the welding-type component for a set period of time after deactivation of the welding-type component.

4. (Original) The welding-type system of claim 3 wherein the cooling system is further configured to automatically terminate circulation when the set period of time expires or temperature of coolant is below a second set point temperature.

5. (Original) The welding-type system of claim 1 wherein the welding component includes a welding torch designed to receive a water hose for circulation of water therein.

6. (Original) The welding-type system of claim 5 wherein the welding torch further includes a jacket radially spaced from the tubular handle, the jacket configured to facilitate ingress and egress of water in thermal proximity to the tubular handle so as to absorb and dissipate heat thermally translated to the coolant from the tubular handle.

7. (Original) The welding-type system of claim 1 wherein the cooling system further comprises a coolant tank, a pump, a motor assembly, a heat exchanger, and a fan operationally connected to one another to circulate coolant to the welding-type component automatically upon activation and during activation of the welding-type component.

8. (Original) The welding-type system of claim 7 wherein the heat exchanger includes a coiled radiator and the cooling system further includes a check valve biased to prevent coolant flow when the welding-type component is disconnected from a power source.

9. (Original) The welding-type system of claim 1 wherein the power source and the cooling system are disposed within a common enclosure.

10. (Original) The welding-type system of claim 1 wherein the activation includes power delivered to the output.

11. (Previously Presented) The welding-type system of claim 1 wherein the cooling system includes at least one of a pressure sensor and a flow meter to provide feedback as to coolant pressure through the welding-type component.

12. (Previously Presented) A welding apparatus comprising:

a power source;

a cooling system designed to circulate coolant;

a welding torch connected to the power source and the cooling system; and

a controller configured to

(A) regulate the cooling system such that upon activation of the welding torch coolant is automatically caused to at least flow through the welding torch;

(B) monitor a temperature of the coolant after deactivation of the welding torch; and

(C) continue to circulate coolant until a temperature of the coolant falls below a predetermined value.

13. (Original) The welding apparatus of claim 12 wherein the controller is further configured to transmit a circulation commencement signal to the cooling system when an activation signal is detected.

14. (Original) The welding apparatus of claim 12 wherein the controller is further configured to transmit a circulation commencement signal to the cooling system automatically upon manual override mode detection.

15. (Original) The welding apparatus of claim 12 wherein the controller is further configured to repeatedly detect a coolant temperature signal and if coolant temperature exceeds a threshold, transmit a circulation maintenance signal to the cooling system independent of welding torch activation status.

16. (Original) The welding apparatus of claim 12 wherein the controller is further configured to maintain coolant circulation until expiration of a time period following deactivation of the welding torch.

17. (Original) The welding apparatus of claim 12 further configured for TIG welding.

18. (Previously Presented) A method for cooling a welding-type component, the method comprising the steps of:

detecting activation of a welding-type component;

upon activation, automatically circulating coolant through the welding-type component;

upon deactivation, monitoring coolant temperature; and

maintaining coolant circulation through the welding-type component if the coolant temperature exceeds a threshold.

19. (Previously Presented) The method of claim 18 further comprising the step of maintaining coolant circulation until expiration of a specified time period following deactivation of the welding type component.

20. (Previously Presented) The method of claim 18 further comprising the step of maintaining coolant circulation until a temperature of the welding-type component falls below a prescribed temperature.

21. (Previously Presented) The method of claim 18 further comprising the step of maintaining a substantially constant flow of the coolant circulating through the welding-type component.

22. (Previously Presented) The method of claim 18 further comprising the step of maintaining coolant circulation until a temperature of the coolant circulating within the welding-type component falls below a prescribed temperature.

23. (Previously Presented) A welding-type apparatus comprising:

means for providing welding-type power;

means for outputting welding-type power to an output area;

means for detecting activation of the means for the outputting welding-type power;

means for automatically circulating coolant through at least the means for providing welding-type power upon activation of the means for outputting welding-type power ;

means for detecting deactivation of the means for outputting welding-type power;

means for determining coolant temperature; and

means for maintaining coolant circulation until coolant temperature falls below a certain set point.

24. (Previously Presented) The welding apparatus of claim 12 wherein the cooling system includes a flow meter to provide feedback as to coolant pressure through the welding torch.

EVIDENCE APPENDIX:

-- None --

RELATED PROCEEDINGS APPENDIX:

-- None --